

REMARKS

The Examiner objected to claims 17-24, suggesting that the term "a computer readable medium" be replaced by the term "a non-transitory computer readable medium" to explicitly exclude any form of transitory medium. Claims 17-24 have been rewritten accordingly, curing the defect.

The Examiner rejected claims 1-24 under 35 U.S.C. 112, second paragraph. Applicant submits that as currently amended, claims 1-24 satisfy the requirements of 35 U.S.C. 112, second paragraph.

The Examiner stated that it was unclear how an index could be retrieved for an ATM AAL5 cell based on supplying a VPI/VCI *and* a CID, since only AAL2 cells contain a CID. Claims 1, 9 and 17 have been rewritten to make it clear that the index corresponds to unique VPI/VCI **or** VPI/VCI+CID combinations. The former case is applicable to AAL5 cells, and the latter is applicable to AAL2 cells.

The Examiner also stated that it was unclear as to whether the ATM data or the index are stored in the circular buffer. Applicant submits that as the index is placed within the ATM data cell, there is no inconsistency in requiring that both the index and the ATM data be stored in the circular buffer. Claims 1, 9 and 17 have been rewritten to explicitly state that the index corresponding to each ATM cell is placed in the circular buffer in the context portion of that ATM cell. Accordingly, Applicant submits that as currently amended, claims 1, 9, 17, and the claims dependent therefrom are definite.

The Examiner rejected claims 1-2, 9-10, and 17-18 under 35 U.S.C. 103(a) as being unpatentable over Karlsson et al. (previously cited US 7,269,175) in view of Kalkunte et al. (newly cited US 2003/0231635), VanDervort (previously cited US 2003/0088685) and

Takada et al. (previously cited US 6,850,520). Applicant submits that as currently amended, claims 1-2, 9-10, and 17-18 are not obvious in view of the cited prior art.

The Examiner states that Karlsson teaches all the limitations of claim 1 except for (1) the circular buffer, (2) the plurality of parallel processing elements, (3) placing the index corresponding to each ATM cell in the circular buffer, (4) determining a cell type using the index, and (5) determining the AAL mode, if any, of each cell. The Examiner looks to Kalkunte for teaching (1), Takada for teaching (2), and VanDervort for teaching (3), (4) and (5). The Examiner maintains that it would have been obvious to apply the teachings of these secondary references to achieve more efficient “shaping for different types of traffic” (Kalkunte), to “quickly detect failures and changes in quality” (Takada), and to “determine ways of improving the performance of the high speed ATM networks” (VanDervort) respectively.

Applicant submits that there are teachings missing from Karlsson other than those acknowledged by the Examiner. Applicant will first discuss these teachings, and then respond to the Examiner’s arguments regarding the teachings which the Examiner admits are missing from Karlsson.

First, claim 1 requires a content addressable memory (CAM) configured to receive any of the VPI, VCI and CID information related to each ATM cell and **configured to provide an index when particular VPI, VCI and CID information is identified**, the index corresponding to unique VPI/VCI or VPI/VCI+CID combinations. The Examiner points to column 9, lines 52+, of Karlsson as providing this teaching. At most, the cited passage teaches that a CAM may receive VPI/VCI information and provide the **address** of the location containing the VPI/VCI information when a look-up table identifies a hit for that particular VPI/VCI connection, but this is not equivalent to teaching the provision of the index recited in the claim. Neither Kalkunte, Takada, nor VanDervort provide the missing teachings.

Second, as noted above with respect to the rejection under 35 U.S.C. 112, claim 1 has

been amended to specify that the index corresponding to each ATM cell is placed in the circular buffer **in the context portion of that ATM cell**. Applicant finds no teaching of this limitation in any of the cited prior art.

Applicant will now address the Examiner's arguments regarding limitations (1), (3), and (4) regarding the circular buffer and the index.

First, claim 1 requires a circular buffer for storing ATM data. The Examiner points to paragraphs 31-33 of Kalkunte, identifying the VC control structures 74 and 75 as the recited circular buffers. The Examiner suggests that it would be obvious to replace the SAR channel FIFO's 410 of Karlsson with the VC control structures of Kalkunte to achieve more efficient "shaping for different types of traffic".

The cited passages in Kalkunte teach that circular buffers 74 and 75 are "calendarqueues" that maintain schedules for shaped and unshaped network traffic, storing cells at the appropriate granularity to support the timing details for the transmission of different types of traffic, of constant or variable bit rates. First, Applicant submits that the benefit suggested by the Examiner - efficient shaping for different types of traffic, so that different types can be transmitted at different times and rates - has no obvious relevance to the system of Karlsson, which is concerned with the **interleaving** of AAL2 cells from one sub-system with signaling and management packets from another subsystem, before transmission at some common rate. Second, replacing the FIFO's of Karlsson with circular buffers would not provide any advantage in the apparatus taught therein. In fact, the suggested modification would actually require additional hardware to keep track of the oldest entry that has not been overwritten or outputted.

Accordingly, Applicant submits that there would be no obvious motivation to replace the FIFO's of Karlsson with the circular buffers of Kalkunte. The other prior art cited by the Examiner does not provide the missing motivation.

Second, claim 1 requires that the index corresponding to each ATM cell **be placed in the circular buffer**. The Examiner points to column 14, lines 23-30 of VanDervort as providing this teaching, identifying the VC Region Index Signal of VanDervort as the recited index, and stating that this index “is sent to and stored by a FIFO” which the Examiner again suggests could be replaced by one of the circular buffers of Kalkunte. However, Applicant finds no teaching in the cited passage or elsewhere in VanDervort that the VC Region Index Signal is placed in any FIFO. Indeed, Figure 6 of VanDervort clearly shows that this “index” is sent directly to DPRAM 120, while the two FIFOs in the system store other data (such as the counts vector) that cannot be interpreted as the recited index as they do not correspond to unique VPI/VCI or VPI/PCI+CID combinations. Hence, VanDervort does not provide the required teaching regarding the placing of the recited index in the circular buffer.

Third, claim 1 requires that a cell type be determined **using the index**. The Examiner points to column 16, Table I of VanDervort as providing this teaching. At most, the cited table shows that the cell type must have been determined, but there is no teaching regarding how this determination is made. Hence, VanDervort does not provide the required teaching regarding determining cell type using the recited index.

Accordingly, Applicant submits that as currently amended, claim 1 and the claims dependent therefrom are not obvious in view of the cited prior art.

Claim 2 depends from claim 1 and further requires that the circular buffer communicate with the plurality of parallel processing elements simultaneously. The Examiner looks to Takada for the additional teaching, pointing to figure 4 and column 2, lines 27+. The Examiner maintains that it would have been obvious to apply the teachings of Takada to the method of Karlsson/Kalkunte “to quickly detect failures and changes in quality”. The system of Karlsson is configured to access data in the FIFOs sequentially, using a single processor, i.e. the mode of operation of Karlsson is based on sequential serial access. Even if the FIFOs of Karlsson were to be replaced by circular buffers, the system would need substantial reconstruction and redesign in order to allow for the distinctly different mode of operation based on parallel access as specified

in the claim.

“If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959) (Claims were directed to an oil seal comprising a bore engaging portion with outwardly biased resilient spring fingers inserted in a resilient sealing member. The primary reference relied upon in a rejection based on a combination of references disclosed an oil seal wherein the bore engaging portion was reinforced by a cylindrical sheet metal casing. Patentee taught the device required rigidity for operation, whereas the claimed invention required resiliency. The court reversed the rejection holding the "suggested combination of references would require a substantial reconstruction and redesign of the elements shown in [the primary reference] as well as a change in the basic principle under which the [primary reference] construction was designed to operate." 270 F.2d at 813, 123 USPQ at 352.)”.

Hence, there are additional grounds for allowing claim 2.

Claim 9 has been amended in a similar way to claim 1. Claims 9 and 10 are method claims, with limitations corresponding in method form to the system limitations of claims 1 and 2. Applicant refers the Examiner to the arguments presented above with respect to claims 1 and 2. As noted above with respect to claim 1, the cited prior art does not teach the circular buffer, the placing of the index in that buffer, in the context portion of the ATM cell, the use of the index to determine cell type, or the provision of the index by the CAM when particular VPI, VCI and CID information is identified. Hence, Applicant submits that as currently amended, claim 9 and the claims dependent therefrom are not obvious in view of the cited prior art. Similarly, claim 10 is patentable over the art for the same reasons claim 2 is allowable.

Claim 17 has been amended in a similar way to claims 1 and 9. Claims 17 and 18 concern computer program logic, with specific limitations corresponding to the limitations of claims 1 and 2. Applicant refers the Examiner to above arguments with respect to claims 1 and 2. In brief,

as noted above with respect to claim 1, the cited prior art does not teach the circular buffer, the placing of the index in that buffer, in the context portion of the ATM cell, the use of the index to determine cell type, or the provision of the index by the CAM when particular VPI, VCI and CID information is identified. Hence, Applicant submits that as currently amended, claim 17 and the claims dependent therefrom are not obvious in view of the cited prior art. Similarly, there are the same additional grounds for allowing claim 18 as those noted above with respect to claims 2 and 10.

The Examiner rejected claims 3-8, 11-16, and 19-24 under 35 U.S.C. 103(a) as being unpatentable over Karlsson in view of Kalkunte, Takada and VanDervort as applied to claims 2, 10 and 18 above, and further in view of Suzuki et al. (previously cited US 6,687,250). Applicant submits that as currently amended, claims 3-8, 11-16, and 19-24 are not obvious in view of the cited prior art.

Claims 3-8, 11-16, and 19-24 depend from claims 2, 10 and 18 respectively. The Examiner looks to the combination of Karlsson, Kalkunte, Takada and VanDervort as teaching the limitations of claims 2, 10 and 18 and to Suzuki for the additional teachings required by dependent claims 3-8, 11-16, and 19-24.

Applicant submits that as noted above with respect to claims 2, 10 and 18, the combination of Karlsson, Kalkunte, Takada and VanDervort does not teach all the requirements of the base claims 1, 9, and 17, or the additional limitations specified by claims 2, 10, and 18. In brief, the cited prior art does not teach the circular buffer, the placing of the index in that buffer, in the context portion of the ATM cell, the use of the index to determine cell type, the provision of the index by the CAM when particular VPI, VCI and CID information is identified, or the simultaneous communication of the circular buffer with the plurality of parallel processing elements.

Suzuki does not provide the missing teachings. Hence, Applicant submits that as currently amended, claims 3-8, 11-16, and 19-24 are not obvious in view of the cited prior art.

Respectfully Submitted,

A handwritten signature in black ink, appearing to read "Calvin B. Ward". The signature is fluid and cursive, with the first name "Calvin" being more prominent.

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